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LINEAR OPTIMIZATION
Information Sheet

MATH 407A
Summer 2001

- **Instructor:** David L. Ragozin, e-mail : rag@math.washington.edu
- **Office:** Padelford C-337, Phone: 543-1148
- **Class Web Site:** `http://faculty.washington.edu/rag/CLASSES/m407`
- **Study Session/Office Hours:** Wednesday 10AM-1PM, Math Sciences Computing Laboratory, Communications (CMU) B022
  - Stop me after class to find a time if posted hours are not possible. Please do no hesitate to come to see me. It is much better to raise questions as soon as they occur, rather than get farther behind.
- **Texts:** Paul Tseng's *Math 407: Linear Optimization* available at Professional Copy 'n Print
- **Content:**
  - Math 407 is an introductory course in linear programming(or LP). The course will cover almost the entire text. The four basic components of the course are modeling, solution methodology, duality theory, and sensitivity analysis. Modeling concerns the question of how problems posed in the *real world* can be formulated in terms of the mathematical framework called linear programming. Solution methodologies concern practical techniques for computing the solution of an LP. We focus on the simplex algorithm due to George Dantzig since it offers a complete framework for discussing both the geometry and duality theory for linear programs. Duality theory illustrates the rich underlying mathematical structure of linear programming and its extensions. We will interpret the duality theory in a number of ways. In particular, we show how it can be used to explain pricing systems in free market economies. Sensitivity analysis concerns the behavior of the optimal solution subject to changes in the initial data describing the problem.
- **Homework:**
  - Working the assigned problems is essential to learning the material. Homework will be due weekly on Thursdays. There will be 6 or 7 assignments worth 10 points each.
  - Solutions will be available on the due date.
  - When you write a **solution** to home work or a test , explanations or supporting work should *always* be supplied; a solution demonstrates *that you understand the methods involved*. It is not enough to just give a numerical, or yes/no **answer**.
- **Quizzes:**
  - There will be a short (20 minute) quiz almost every Thursday (with a few exceptions, like just before or after an exam)
  - The quizzes are worth 10 points.
  - Your best 5 quizzes will count toward your final grade.
- **Exams:**
  - There will be one midterm exam on Thursday, July 26, and a final exam, in class on Thursday, August 16. For each exam in class, you will be allowed two 8.5 by 11 sheets of notes (187 sq. in) , but otherwise the exams will be closed book. The midterm will be worth 100 points and the final will be worth 150 points.

  - The final exam will have a take-home part. This will be handed out *the class before the in-class exam* and will be handed in with your in-class exam. The take home exam is to be worked entirely on your own, using the text and handouts as references, but not consulting or comparing work with any other people, or consulting other references.
- **Projects:**
  - There may be a small group (4-5 people) computing project which will deal formulating and solving LP problems using Excel. The project assignment will be available at least two weeks before it is due. More details will be available in the middle of July. Prior to that time independent work using Excel to do LP problems would be valuable. The project would be worth about 25-30 points.
- **Exam-Project Schedule:**

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Midterm exam    July 26, 2001
Project ??      Possibly Late July or early August
Final Exam      August 16, 2001 9:40AM - In class
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- **Grades:** Grades are based on total points earned through exams, quizzes, and homework, and the project.
  Approximate grade guidelines(for the course and for each exam) based on the % correct over all components:

GRADE RANGE	% Correct
4.0	> 90%
3.0 - 3.9	75% - 89%
2.0 - 2.9	60% - 74%
1.0 - 1.9	45% - 59%
0.0	< 45%

Last Modified: Tues. June 19, 2001 2:14 pm

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Back to the Math 407 Home Page